

# CONTRIBUTIONS TO THE FAUNA OF MANIPUR STATE, ASSAM.

## PART I. GENERAL INTRODUCTION.

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### [PLATE IV.]

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#### I. GENERAL.

While serving as Mammalogist to the General Headquarters (India) Field Typhus Research Team, based on Imphal (Manipur, Assam), during the last year of the War (1945), the writer took the opportunity of making a general zoological collection covering several groups of animals, particularly the following :—

(1) Mammals, (2) Birds, (3) Reptiles, (4) Fishes, (5) Insects, spiders, parasitic mites and some other Arthropods, and (6) Helminths from mammals.

Of these, the largest collections belonged to the mammals, birds, insects and spiders ; a few molluscs and Crustacea were also collected. With the permission of the Army Headquarters, India, these collections have been incorporated with the Reserve Collections of the Zoological Survey of India.

As Manipur is, zoologically speaking, a comparatively rather poorly known area, except in regard to certain groups such as fishes, molluscs, the larger mammals, etc., the collections in other groups are likely to be of considerable systematic and distributional interest. It has, therefore, been considered worthwhile to study the collections and to issue the systematic results in a series of contributions by the writer, and by other specialists as available. The field notes, where given, are all by the writer.

My collections cover a continuous period of six months from the beginning of July until the end of December 1945. They were made mostly in the Imphal Valley, in the stretch of country about two miles on either side of the metalled Dimapur-Imphal Road from about Milestone 105 to Imphal on the north, a distance of 28 miles ; and a similar stretch on the Imphal-Tamu Road from Imphal to about Milestone 37, eight miles beyond Palel. This continuous stretch was, therefore, about 65 miles in length and about 4 miles wide (Pl. IV). The

area between Milestones 110 and 118, which was most intensively surveyed, has been referred to as the "Kanglatongbi area" after the village of Kanglatongbi (Milestone 121). The "Kanglatongbi Field Typhus Station" was situated near the road at Milestone 117; and the main Base Laboratory about  $1\frac{1}{2}$  miles away from the road off Milestone 127 and about 6 miles north of Imphal town. A few mammals were also collected in the Kabaw Valley up to Kalewa on the R. Chindwin in western Burma.

In addition to this collection, the mammal and bird reports will also include an account of the collections made in Manipur by a party of the Zoological Survey of India in February 1936—this collection was made in the Imphal Valley and in the western hills of Manipur along the Imphal-Silchar road, the collecting stations and dates of collection (1936) being as follows:—"Manipur" [=Imphal] (4 Feb.), Karong (5 Feb.), Tairenpokpi (7 Feb.), Luanglong Khunow and Luanglong Khulen (9 Feb.), Regailous Camp (9 and 11 Feb.), Nanglea Atrow (12-14 Feb.), and Kalanaga (15-16 Feb.).

The following is a list of all the collecting localities (Pl. IV), with their altitudes in feet above sea-level:—

### I—Manipur.

(a) *Imphal-Dimapur Road.*

Imphal town .. .. .. .. ..	2,570 feet.
Kanglatongbi Village (Milestone 121) .. ..	2,930 feet.
"Kanglatongbi area" (Milestones 110-118) .. ..	3,000-3,500 feet.
Modbung (off Milestone 117) .. ..	3,750 feet.
Kangpokpi (Milestone 105) .. ..	3,750 feet.
Karong .. .. .. .. ..	<i>circa</i> 4,500 feet.

(b) *Imphal-Palel-Tamu Road.*

Palel (Milestone 129) .. .. .. ..	2,500 feet.
Milestone 34 .. .. .. ..	3,750 feet.
Milestones 35-37 .. .. .. ..	<i>circa</i> 4,000 feet.

(c) *Imphal-Ukhrul Road.*

Ukhrul .. .. .. .. ..	<i>circa</i> 3,500 feet.
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(d) *Imphal-Silchar Road.*

Tairenpokpi .. .. .. .. ..	3,000 feet.
Luanglong Khulen (Gangloangmai) .. ..	
Luanglong Khunow (Gangloangnamthanmai) .. ..	
Regailous Camp .. .. .. .. ..	<i>circa</i>
Nanglea Atrow .. .. .. .. ..	3,250 feet.
Kalanaga (Oinamlong) .. .. .. .. ..	

### II—Western Burma.

Moreh .. .. .. .. ..	<i>circa</i> 580 feet.
Tamu .. .. .. .. ..	580 feet.
Kindat .. .. .. .. ..	400 feet.
Kalewa .. .. .. .. ..	360 feet.

### II. PHYSIOGRAPHY, CLIMATE, ETC. OF MANIPUR.

Manipur State lies at the extreme east of India and abuts on Burma. It is situated between  $23^{\circ} 50'$  and  $25^{\circ} 41'$  north latitudes and  $93^{\circ} 2'$  and  $94^{\circ} 47'$  east longitudes, and covers an area of about 8,456 square miles.

The greater part of Manipur is hilly and varies in altitude from about 2,600 feet (Imphal or Manipur Valley) to about 10,000 feet (Mao Thana peak in N. Manipur) above sea-level. The hill-ranges generally run

north to south. The Imphal Valley, which forms the centre of Manipur, is about 30 miles long and 20 miles broad, and is surrounded by hills some of which rise upto about 6,000 feet above sea-level. The principal rivers in the western hills are the Barak (with its tributary, the Irang) and the Imphal (or Manipur), both rising in the north and running to the south. The former drains into the Brahmaputra, the latter into the Chindwin. South of Imphal lies the large fresh-water sheet named Loktak (Logtak) Lake which is about 8 miles long and 5 miles broad.

The climate of the Imphal Valley is mild, with cool summers and cold, but not severe, winters. The highest shade temperate is about 92°F. and the lowest about 30° F. At higher altitudes it is, of course, colder. The average annual rainfall at Imphal is about 70 inches, by far the greatest portion of it being received during the few monsoon months of June to September. The prevailing winds are from the south and west ; storms are uncommon.<sup>2</sup>

The chief cultivation in the Imphal Valley is rice. In the uncultivated portions, the flat areas are occupied by oak scrub, riverine associations and partly by evergreen rain jungle, the last named also covering all the hill-sides ; there are no bamboo jungles. At higher altitudes, that is, towards Kohima in the north and Palel in the south-east, the hills-sides are less rich in trees and are mainly covered with grass and scrub. In the western portions of Manipur, between Imphal and Silchar (Cachar), the country is covered largely with dense evergreen forests and bamboo jungle.

The detailed ecological (physico-botanical) characterization of the collecting areas in the Imphal Valley and the vicinity has been given elsewhere (Roonwal, 1949). Here it will be sufficient to mention that six major types of associations have been recognized as follows :—

- (1) Oak Scrub. (In "Kanglatongbi area"; altitude ca. 3,500 feet above sea-level.)
- (2) Evergreen Rain Jungle. (Ditto.)
- (3) Riverine Associations. (Ditto.)
  - (a) Riverine scrub.
  - (b) Riverine jungle.
  - (c) Riverine meadow.
  - (d) *Butea minoa* community.
- (4) Oak Parkland. (In "Palel area"; altitude ca. 4,000 feet above sea-level.)
- (5) Human Habitations. (Temporary army camps, in "Kanglatongbi", "Palel" and other areas in the vicinity of Imphal; altitude ca. 2,600-4,000 feet above sea-level.)
- (6) Cultivated Fields. (In "Kanglatongbi area" and on Imphal-Palel Road; altitude ca. 2,600-3,500 feet above sea-level.)

<sup>2</sup> This portion of the account has been largely taken from Allen (1905) and Annandale (1921).

## III. ACKNOWLEDGMENTS.

I am indebted, above all, to the Medical Directorate of the General Headquarters for the facilities provided. The co-operation received from all the members of the Indian and British Typhus Research Teams in S. E. Asia is thankfully acknowledged. I am particularly indebted to my friend Flight-Lieutenant A. A. Bullock, R.A.F., D.Sc., Botanist with the Scrub Typhus Research Laboratory, and his Assistant, Sergeant N. Kennedy, R.A.F., for great assistance in procuring zoological specimens, particularly mammals and birds. Jamadar Kartar Singh I.A.M.C. did most of the field taxidermy work.

To Dr. B. N. Chopra, D.Sc., F.N.I., lately Officiating Director, Zoological Survey of India, I am indebted for facilities and courtesies of every kind that he extended during my service with the Forces both while in the Field and later at the Headquarters of the Zoological Survey. My thanks are also due to the following members of the Survey for various forms of assistance provided: Mr. Bhola Nath, M.Sc., Assistant, Mr. B. Biswas, M.Sc., Research Scholar and Mr. A. N. Fernandez, Taxidermist.

To the Director, Eastern Circle, Survey of India, Shillong, I am obliged for information regarding the altitudes of some of the collecting localities.

## IV. REFERENCES.

Allen, B. C., 1905. Naga Hills and Manipur. In *Assam District Gazetteers*, vol. IX, part 2, Manipur, pp. ii + 151. Calcutta.

Annandale, N., 1921. The aquatic and amphibious Mollusca of Manipur. Prefatory note, and Introduction. *Rec. Indian Mus.* XXII, pp. 529-538.

Roonwal, M. L., 1949. Systematics, ecology and bionomics of mammals studied in connexion with Tsutsugamushi Disease (Scrub Typhus) in the Assam-Burma War Theatre during 1945. *Trans. nation. Inst. Sci. India*, Calcutta, III (2), 52 pp., 6 pls.